

Table 5-1

**Activity Hazard Analysis
Former Rifle Grenade Range, Parcel 221Q-X
Fort McClellan, Calhoun County, Alabama**

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Activity	Potential Hazards	Recommended Controls
Staging equipment	UXO	<ul style="list-style-type: none">• UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.
	Slip, trip, and fall hazards	<ul style="list-style-type: none">• Determine best access route before transporting equipment.• Practice good housekeeping; keep work area picked up and clean as feasible.• Continually inspect the work area for slip, trip, and fall hazards.• Look before you step; ensure safe and secure footing.
	Heavy lifting	<ul style="list-style-type: none">• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	<ul style="list-style-type: none">• Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none">• Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	<ul style="list-style-type: none">• Keep hands, fingers, and feet clear of moving/suspended materials and equipment.• Beware of contact points.• Stay alert at all times!
	Cuts/bruises	<ul style="list-style-type: none">• Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	<ul style="list-style-type: none">• Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	<ul style="list-style-type: none">• Wear light colored clothing (can see ticks better).• Mow vegetated and small brush areas.• Wear insect repellant.• Wear long sleeves and long pants.• Visually check oneself promptly and frequently after exiting the work area.
	Fire	<ul style="list-style-type: none">• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

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Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Contact with moving equipment/vehicles	<ul style="list-style-type: none">• Work area will be barricaded/demarcated.• Equipment will be laid out in an area free of traffic flow.
	Hazard communication	<ul style="list-style-type: none">• Label all containers as to contents and dispose of properly.• Ensure material safety data sheets are available for hazardous chemicals used on site.
	Noise	<ul style="list-style-type: none">• Sound levels above 85 dBA mandate hearing protection.
	Lighting	<ul style="list-style-type: none">• Adequate lighting will be provided to ensure a safe working environment.
	Cold stress	<ul style="list-style-type: none">• Workers should wear insulated clothing when temperatures drop below 40°F.• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.• Remove wet clothing promptly.• Take breaks in warm areas.• Reduce work periods as necessary.• Layer work clothing.
	Poison ivy/oak/sumac	<ul style="list-style-type: none">• Avoid plant areas if possible.• Wear long sleeves and long pants.• Promptly wash clothing that has contacted poisonous plants.• Wash affected areas immediately with soap and water.
	Heat rash	<ul style="list-style-type: none">• Keep the skin clean and dry.• Change perspiration-soaked clothing, as necessary.• Bathe at end of work shift or day.• Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none">• Drink plenty of cool fluids even when not thirsty.• Provide cool fluid for work crews.• Move victim to shaded, cool area.

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Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature) • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> • Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow. • Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. • Barriers shall be used to protect workers from vehicular traffic. • Barriers shall be used to guard excavations adjacent to streets or roadways. • Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. • Heavy equipment shall have backup alarms.
	Forklift operations	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	<ul style="list-style-type: none"> • Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. • Portable electric tools and all cord and plug connected equipment shall be protected by a GFCI device. • Electrical tools shall be inspected daily prior to use.
	Extension cords	<ul style="list-style-type: none"> • Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. • Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. • Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.). • Cords shall be designed for hard duty. • Cords shall be inspected daily.

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Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • Keep all body parts in contact with the ground as close as possible. • Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). • If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornadoes	<ul style="list-style-type: none"> • Listen to radio or TV announcements for pending weather information. • Cease field activities during thunderstorm or tornado warnings. • Seek shelter. Do not try to outrun a tornado.
Surveying	Slip, trip, fall	<ul style="list-style-type: none"> • Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field. • Provide adequate lighting in all work areas. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls. • Work areas will be kept clean and orderly. • Garbage and trash will be disposed of daily in approved refuse containers. • Tools and accessories will be properly maintained and stored. • Work areas and floors will be kept free of dirt, grease, and slippery materials.
	UXO	<ul style="list-style-type: none"> • UXO specialists will perform UXO surface clearance for UXO avoidance.
	Traffic accidents	<ul style="list-style-type: none"> • Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. • If working adjacent to roadways, have workers wear fluorescent orange vests. • Use warning signs or lights to alert oncoming traffic. • Assign flag person(s) if necessary to direct local traffic. • Set up temporary parking locations outside the immediate work area. • Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. • Pedestrians have the right-of-way. • Wear seat belts when vehicles are in motion.
	Wildlife hazards	<ul style="list-style-type: none"> • Workers should be cautious when driving through the site in order to avoid encounters with passing animals.

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Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Biological hazards	<ul style="list-style-type: none"> Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks	<ul style="list-style-type: none"> Wear light colored clothing (can see ticks better). Mow vegetated and small brush areas. Wear insect repellent. Wear long sleeves and long pants. Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> Avoid plant areas if possible. Wear long sleeves and long pants. Promptly wash clothing that has contacted poisonous plants. Wash affected areas immediately with soap and water.
Hydropunch sampling	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. Equipment will be inspected before being put to use and at the beginning of each shift. Faulty/unsafe equipment will be tagged and if possible locked out. Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. All mobile equipment and areas in which they are operated shall be adequately illuminated. Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines will have the wheels chocked. Inspect brakes and tire pressure on drill rig before staging for work. Obtain trenching/drilling permit prior to operation.
	Inexperienced operator	<ul style="list-style-type: none"> Machinery and mechanized equipment shall be operated only by designated personnel. Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgement.
	Jacks/outriggers	<ul style="list-style-type: none"> Ensure proper footing and cribbing.
	UXO	<ul style="list-style-type: none"> UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.

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Activity	Potential Hazards	Recommended Controls
Hydropunch sampling (continued)	Falling objects	<ul style="list-style-type: none"> Remove unsecured tools and materials before raising or lowering the derrick. Stay alert and clear of materials suspended overhead.
	Pinch points	<ul style="list-style-type: none"> Keep feet and hands clear of moving/suspended materials and equipment. Stay alert at all times!
	Fire	<ul style="list-style-type: none"> Mechanized equipment shall be shut down prior to and during fueling operations. Have fire extinguishers inspected and readily available.
	Fall hazards	<ul style="list-style-type: none"> Personnel are not allowed to work off of machinery or use them as ladders. Use fall protection when working above 6 feet.
	Noise	<ul style="list-style-type: none"> Hearing protection is mandatory above 85 dBA.
	Contact with rotating or reciprocating machine part	<ul style="list-style-type: none"> Use machine guards; use long-handled shovels to remove auger cuttings. Safe lockout procedures for maintenance work.
	Heavy lifting	<ul style="list-style-type: none"> Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> Practice good housekeeping; keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.
Groundwater, sediment, and surface water sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. Avoid skin contact with water. Handle samples with care. Only essential personnel will be in the work area. Real-time air monitoring will take place before and during sampling activities. All personnel will follow good hygiene practices. Proper decontamination procedures will be followed. All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	UXO	<ul style="list-style-type: none"> UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.

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Activity	Potential Hazards	Recommended Controls
Groundwater, sediment and surface water sampling (continued)	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Hazard communication	<ul style="list-style-type: none"> • MSDSs shall be obtained for chemicals brought on site. • Label all containers as to contents.
	Strains/sprains	<ul style="list-style-type: none"> • Use the proper tool for the job being performed. • Get assistance if needed. • Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Drowning	<ul style="list-style-type: none"> • Personal flotation devices will be worn when sampling on or adjacent to the water.
	Spills/residual materials	<ul style="list-style-type: none"> • Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	<ul style="list-style-type: none"> • Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	<ul style="list-style-type: none"> • Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.
Soil boring and surface/subsurface sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Avoid skin contact with paint. • Handle samples with care. • Only essential personnel will be in the work area. • All personnel will follow good hygiene practices.. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.
	UXO	<ul style="list-style-type: none"> • UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.

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Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling (continued)	Bees, spiders, and snakes	<ul style="list-style-type: none">Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas.Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.
	Poison ivy/oak/sumac	<ul style="list-style-type: none">Avoid plant areas if possible.Wear long sleeves and long pants.Promptly wash clothing that has contacted poisonous plants.Wash affected areas immediately with soap and water.
	Cold stress	<ul style="list-style-type: none">Workers should wear insulated clothing when temperatures drop below 40 °F.Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.Remove wet clothing promptly.Take breaks in warm areas.Reduce work periods as necessary.Layer work clothing.
	Access/egress hazards	<ul style="list-style-type: none">Use qualified and trained bushhog operator.Keep employees out of the bushhog work area.Utilize good housekeeping practices.Keep aisleways, pathways, and work areas free of obstruction.Clean ice or snow off of walkways or work stations.Use appropriate footwear for the task assigned.
	Heat rash	<ul style="list-style-type: none">Keep the skin clean and dry.Change perspiration-soaked clothing, as necessary.Bathe at end of work shift or day.Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none">Drink plenty of cool fluids even when not thirsty.Provide cool fluid for work crews.Move victim to shaded, cool area.

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Activity	Potential Hazards	Recommended Controls
Soil boring and surface/subsurface sampling (continued)	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature) • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • Keep all body parts in contact with the ground as close as possible. • If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornadoes	<ul style="list-style-type: none"> • Listen to radio or TV announcements for pending weather information. • Cease field activities during thunderstorms or tornado warnings. • Seek shelter. Do not try to outrun a tornado.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
Moving and shipping collected samples	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	<ul style="list-style-type: none"> • Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	<ul style="list-style-type: none"> • Label all containers as to contents and associated
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.

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Activity	Potential Hazards	Recommended Controls
Material storage	Flammable and combustible liquids	<ul style="list-style-type: none"> • Store in NO SMOKING AREA. • Fire extinguisher readily available. • Transfer only when properly grounded and bonded.
Disposal of IDW (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
High-pressure water jetting operations	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Good housekeeping shall be implemented. • The work area shall be kept clean as feasible. • Inspect the work area for slip, trip, and fall hazards.
	Fueling	<ul style="list-style-type: none"> • Only approved safety cans shall be used to store fuel. • Do not refuel equipment while it is operating. • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

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Activity	Potential Hazards	Recommended Controls
High-pressure water jetting operations (continued)	Faulty or damaged equipment	<ul style="list-style-type: none"> Equipment shall be inspected before being placed into service and at the beginning of each shift. Preventive maintenance procedures recommended by the manufacturer shall be followed. A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High-pressure water	<ul style="list-style-type: none"> Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). One standby person shall be available within the vicinity of the pump during jetting operation. The work area shall be isolated and adequate barriers will be used to warn other site personnel.
	Unqualified operators	<ul style="list-style-type: none"> Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.
	Out of control equipment	<ul style="list-style-type: none"> No machinery or equipment is permitted to run unattended. Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	<ul style="list-style-type: none"> Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	<ul style="list-style-type: none"> All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	<ul style="list-style-type: none"> Keep feet and hands clear of moving/suspended materials and equipment. Stay alert and clear of materials suspended
	Falling objects	<ul style="list-style-type: none"> Hard hats are required by site personnel. Stay alert and clear of material suspended overhead.
	Flying debris	<ul style="list-style-type: none"> Impact-resistant safety glasses with side shields are required.
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> All site personnel will wear the appropriate PPE.

UXO - Unexploded ordnance.
 dbA - Decibels.
 °F - Degrees Fahrenheit.
 MSDS - Material safety data sheet.

GFCI - Ground-fault circuit interrupter.
 TV - Television.
 IDW - Investigation-derived waste.